AMENDMENTS TO THE CLAIMS:

1. (Currently Amended) A system for determining signal time of arrival in a wireless communication system, comprising:

a searcher operable to analyze received signals to determine a correlation signal level at predetermined points in time, the searcher determining a maximum signal level at a selected one of the predetermined points in time; and

a modeling processor operable to generate a second order polynomial mathematical model of a predetermined response function using the maximum signal level and correlation signal levels from predetermined points in time adjacent the selected time, the modeling processor using the mathematical model to determine a time associated with a peak correlation signal level, and further operable to determine a time of arrival of the received signals based on the time associated with the peak correlation signal level and an offset time encoded in the received signals.

2. (Original) The system of claim 1 wherein the correlation signal levels are based on received signal strength of the received signals.

3. (Original) The system of claim 1 wherein the maximum signal level and correlation signal levels from predetermined points in time adjacent the selected time are used to determine coefficients in the mathematical model.

4. (Original) The system of claim 3 wherein the coefficients in the mathematical model are used to determine the time associated with a peak value of the mathematical model.

5. (Canceled)

6. (Original) The system of claim 1 wherein the mathematical model is a second-order mathematical function with three coefficients, the maximum signal level and two correlation signal levels from predetermined points in time adjacent the selected time being used to determine the three coefficients in the mathematical model.

7. (Original) The system of claim 1 wherein the mathematical model is a quadratic function having the form: $y(x)=ax^2+bx+c$.

8. (Original) The system of claim 7 wherein the maximum signal level and correlation signal levels from predetermined points in time adjacent the selected time are used to determine coefficients in the mathematical model.

9. (Original) The system of claim 8 wherein the coefficients in the mathematical model are used to determine a time associated with a peak value of the mathematical model.

10. (Previously Presented) A system for determining signal time of arrival in a wireless communication system, comprising:

a searcher operable to analyze received signals to determine a correlation signal level at predetermined points in time, the searcher determining a maximum signal level at a selected one of the predetermined points in time; and

a modeling processor operable to generate an nth order polynomial, n being greater than two, mathematical model of a predetermined response function using the maximum signal level and correlation signal levels from predetermined points in time adjacent the selected time, the modeling processor using the mathematical model to determine a time associated with a peak correlation signal level, the maximum signal level and correlation signal levels from predetermined points in time adjacent the selected time being used to determine coefficients in the mathematical model.

11. (Currently Amended) A system for determining signal time of arrival in a wireless communication system, comprising:

analysis means for analyzing received signals to determine a correlation signal level at predetermined points in time and for determining a maximum signal level at a selected one of the predetermined points in time; and

modeling means for generating a second-order mathematical model of a predetermined response function using the maximum signal level and correlation signal levels from predetermined points in time adjacent the selected time, the mathematical model being used to determine a time associated with a peak correlation

signal level, and further for determining a time of arrival of the received signals based on the time associated with the peak correlation signal level and an offset time encoded in the received signals.

12. (Original) The system of claim 11 wherein the correlation signal levels are based on received signal strength of the received signals.

13. (Original) The system of claim 11 wherein the modeling means uses the maximum signal level and correlation signal levels from predetermined points in time adjacent the selected time to determine coefficients in the mathematical model.

14. (Original) The system of claim 13 wherein the coefficients in the mathematical model are used to determine the time associated with a peak value of the mathematical model.

15. (Canceled)

16. (Previously Presented) A system for determining signal time of arrival in a wireless communication system, comprising:

analysis means for analyzing received signals to determine a correlation signal level at predetermined points in time and for determining a maximum signal level at a selected one of the predetermined points in time; and

modeling means for generating an nth order mathematical model, n being greater than two, of a predetermined response function using the maximum signal level and correlation signal levels from predetermined points in time adjacent the selected time, the mathematical model being used to determine a time associated with a peak correlation signal level.

17. (Currently Amended) A method for determining signal time of arrival in a wireless communication system, comprising:

analyzing received signals to determine a correlation signal level at predetermined points in time;

determining a maximum signal level at a selected one of the predetermined points in time;

generating a second order mathematical model of a predetermined response function using the maximum signal level and correlation signal levels from predetermined points in time adjacent the selected time; ~~and~~

using the mathematical model to determine a time associated with a peak correlation signal level;

determining an offset time encoded within the received signals, the offset time identifying a source of the received signals; and

determining a time of arrival of the received signals based on the time associated with the peak correlation signal level and the offset time.

18. (Original) The method of claim 17 wherein the correlation signal levels are based on received signal strength of the received signals.

19. (Original) The method of claim 17 wherein the maximum signal level and correlation signal levels from predetermined points in time adjacent the selected time are used to determine coefficients in the mathematical model.

20. (Original) The method of claim 19 wherein the coefficients in the mathematical model are used to determine the time associated with a peak value of the mathematical model.

21. (Canceled)

22. (Previously Presented) The method of claim 17 wherein coefficients in the second-order mathematical function are used to determine the time associated with a peak value of the mathematical model.

23. (Previously Presented) A method for determining signal time of arrival in a wireless communication system, comprising:

analyzing received signals to determine a correlation signal level at predetermined points in time;

determining a maximum signal level at a selected one of the predetermined points in time;

generating an nth order mathematical model, n being greater than two, of a predetermined response function using the maximum signal level and correlation signal levels from predetermined points in time adjacent the selected time; and

using the mathematical model to determine a time associated with a peak correlation signal level, the maximum signal level and correlation signal levels from predetermined points in time adjacent the selected time being used to determine coefficients in the mathematical model.

24. (New) The system of claim 1, wherein the offset time encoded in the received signals identifies a source of the received signals.

25. (New) The system of claim 1, further comprising a timer configured to provide system time used to measure the offset time.

26. (New) The system of claim 1, wherein the modeling processor is further operable to determine the time associated with the peak correlation signal level based on the mathematical model and an iterative algorithm that avoids a division operation.